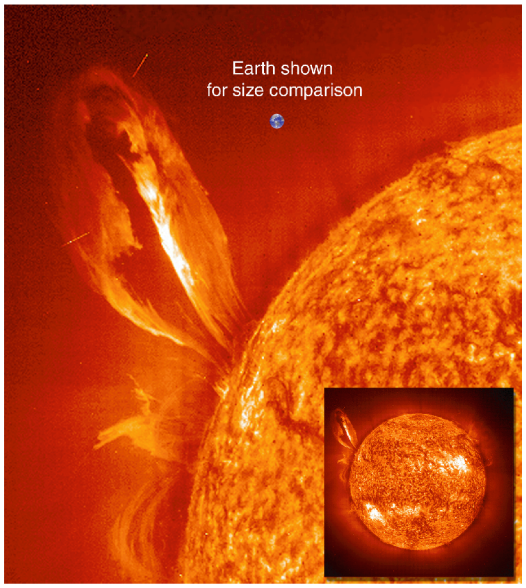
Dynamic Sun

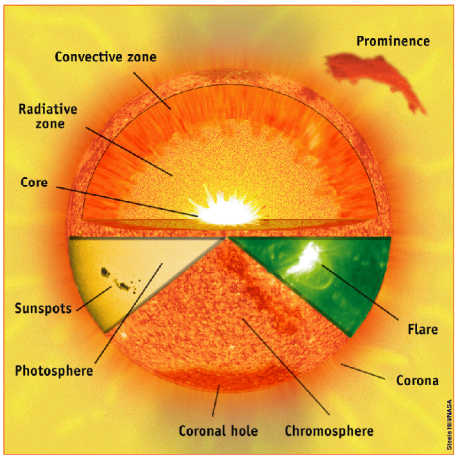
Fact Sheet Fact Sheet Fact Sheet

A Few Simple Solar Facts...

- The Sun is not a planet but rather one star among many in the Milky Way galaxy. The Sun is visible because it emits large quantities of light. The planets in turn become visible or shine by reflecting this sunlight. The planets orbit around the Sun creating the Solar System; while the Sun and planets orbit around the Milky Way among many other stars.
- The Sun is an average star, in that there are other stars which are much hotter and cooler as well as brighter and dimmer than it is. However, since it is by far the closest star to the Earth, it looks bigger and brighter in our sky.
- The Sun's diameter is around 1.4 million km (900,000 miles). It is approximately 110 times wider than the Earth, which is "only" 13 thousand km (8000 miles) wide. (110 Earths would fit across the diameter of the Sun!)



- It would take about one million Earths to fill the Sun if it were a hollow ball. If you think of the Sun as a basketball, the Earth would only be the size of a head of a pin.
- The Sun can be divided into six layers. From the center out:
  - core
  - radiative zone
  - convective zone
  - photosphere
  - chromosphere
  - corona



- The Sun is about 93 million miles, or 150 million kilometers, away from the Earth. If the Sun were the size of a Basketball and the earth the head of a pin, the Basketball and the pin would be separated by about 100 feet – a third of a football field.
- Traveling at 60 miles per hour (80 km), it would take 176 years to get to the Sun. (26 years by plane!)
- The Sun is a ball of plasma containing most of the elements but is made up mostly of hydrogen, helium, oxygen, carbon, nitrogen, and neon.

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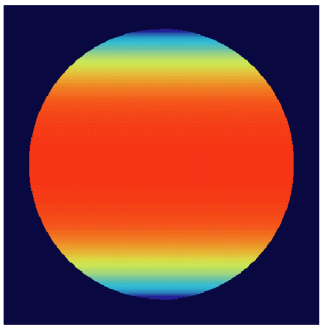
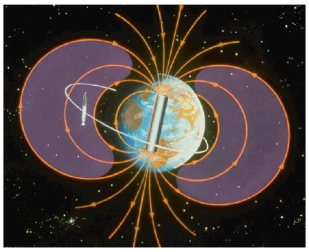
A Few Simple Solar Facts Continued...

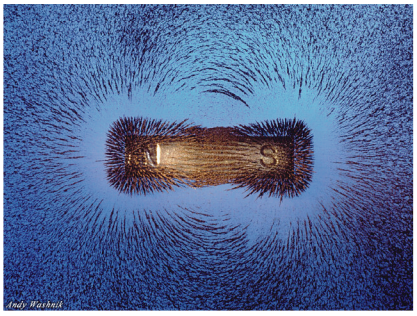
- All of the heat and light that the Earth receives from the Sun is produced by the nuclear fusion reactions in the Sun's core that power the Sun.
- The nuclear reactions in the core of the Sun convert approximately 4 million tons of hydrogen into energy every second.
- The energy produced through fusion in the Sun's core powers the Sun and produces all of the heat and light that we receive here on Earth.
- The Sun is extremely hot! The middle of the Sun is at least 10 million Kelvin (K). The “surface” of the Sun (What we see) is only 5800 K. This is cool for the Sun, but is only about 16 times hotter than boiling water. The corona, which is the outer atmosphere of the Sun and can't be seen without a telescope, is extremely hot, about 1.5 to 2 million K. How these large temperature changes are produced is very interesting to scientists. (Temperatures are quoted in Kelvin. Water boils at 273 K, freezes at 272 K; H ionizes at 10,000 K.)
- The Sun is hot enough that it is made up of plasma (ionized material).
- Because the Sun is plasma and not a solid like the Earth, the Sun rotates faster at the equator than it does at the poles.



(The blue indicates slower rotations speeds and the red faster rotation speeds.)

- The Sun spins around on itself once every 27.4 days.
- The Sun has magnetic field lines similar to those on earth or a bar magnet





- The speed of light is 186,000 miles per second or 300,000 kilometers per second. Therefore it takes about 500 seconds or a little over 8 minutes for the Sun's light to reach the Earth.
- The Sun is about 5 billion years old and should “burn” for another 5 billion years. After this, it will begin burning helium and will expand to about 100 times its current size and become a red giant. Once it runs out of helium it will become a much smaller object called a white dwarf.